

WHAT IS CLAIMED IS:

1. An endoscopic stapling assembly for securing tissue internal to the body, utilizing a flexible endoscope, comprising:

5 a staple for clamping or securing tissue inside of the body;

means operatively engageable with said staple for securing said staple in a closed position once staple is positioned and closed on desired tissue;

means for providing a working channel for active stapler components;

10 means, operatively connected to said means for providing, for holding said staple during deployment thereof and manipulating said staple into an open or closed position, said active stapler components being operatively connected to said means for holding and manipulating, for operating same; and

means for holding additional staples to facilitate loading of said additional staples into said means for holding and manipulating.

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2. The endoscopic stapling assembly in accordance with claim 1, wherein said staple is biased to an open position having an open-position angle greater than an open-position angle of the staple holder component.

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3. The endoscopic stapling assembly in accordance with claim 2, wherein said staple is insertable into tissue for clamping together opposing segments of tissue.

4. The endoscopic stapling assembly in accordance with claim 2, wherein said staple is made from shape memory or flexible metal.

5 5. The endoscopic stapling assembly in accordance with claim 2 wherein said staple has notches along a backside of said staple to guide, accept, and secure a backbone locking element.

6. The endoscopic stapling assembly in accordance with claim 2 wherein said staple is configured with opposing legs of a single folded over material, said legs being formed in an arc configuration, said legs having distal tips that touch one another when said staple is in a closed position, said distal tips of said legs being pointed.

7. The endoscopic stapling assembly in accordance with claim 1, wherein said means for securing said staple in said closed position comprises a backbone made of rigid material having a pair of legs slidable over a backside of said staple and securable firmly over the closed staple, said legs having inwardly extending protrusions engageable in notches or recesses provided in said staple for locking into place over said closed staple.

8. The endoscopic stapling assembly in accordance with claim 7, wherein said means for securing said staple in a closed position includes means for advancing said backbone over said staple, said means for advancing including a push bar, said push bar being connected to a handle mechanism at a proximal end of said means for providing a working channel.

9. The endoscopic stapling assembly in accordance with claim 1, wherein said means for holding and manipulating comprises formed metal components connected to a drive-wire and handle mechanism.

5 10. The endoscopic stapling assembly in accordance with claim 9 wherein said formed metal components are comprised of opposing jaws, whereby opposing faces or surfaces of the jaws are formed to securely hold said staple, and wherein said jaws are adapted to enter and grasp tissue.

10 11. The endoscopic stapling assembly in accordance with claim 10 wherein distal ends of said jaws are pointed for enabling said jaws to enter targeted tissue, said means for holding and manipulating including means for operating said jaws to clamp the staple closed over the tissue, said jaws being provided along mutually facing surfaces with grooves for seating said staple and allowing for said backbone to slide over the closed staple.

15 12. The endoscopic stapling assembly in accordance with claim 10 wherein jaws are attached to a drive mechanism that opens and closes said jaws, said drive mechanism being attached to a handle mechanism.

20 13. The endoscopic stapling assembly in accordance with claim 10 wherein said jaws are re-loadable with additional staples and backbone locking elements from said means for holding additional staples.

14. The endoscopic stapling assembly in accordance with claim 1, wherein said means for providing a working channel comprises a distal end connected to a staple deployment mechanism, a proximal end connected to an actuation and handle mechanism, said means for providing a working channel comprising at least one lumen-forming elongate tube made of a flexible material and having a proximal and distal end.

15. The endoscopic stapling assembly in accordance with claim 1, wherein said means for holding and manipulating includes a pair of opposed jaws and a drive mechanism operatively coupled to said jaws, said drive mechanism comprising a handle mechanism composed of multiple sliding components and further comprising a drive-wire connected to said jaws and at least one of said sliding components, and a longitudinally displaceable push bar.

16. The endoscopic stapling assembly in accordance with claim 1, wherein said means for holding additional staples comprises a tray with preformed holes to securely hold staples in an open configuration, said tray also provided with orientation structure for maintaining a plurality of backbones at proximal ends of the staples in said tray, said backbones being locking elements engageable with the respective staples to maintain the staples in a closed post-firing configuration.

17. A staple assembly for use in rigid or flexible endoscopy for securing tissue internal to the body comprising:

means for clamping or securing tissue inside of the body;

means, engageable with said means for clamping or securing, for locking the staple in a closed position once the staple is positioned and closed on desired tissue.

18. The staple assembly in accordance with claim 17, wherein said means for clamping or securing tissue inside of the body comprises a staple capable of being opened and closed, said staple being biased to an open position, said staple having a biased open position angle that is is greater than an open position angle of a staple holder component.

18. The staple assembly in accordance with claim 17, wherein said staple is insertable into tissue for clamping together opposing segments of the tissue.

19. The staple assembly in accordance with claim 17, wherein said staple is made from shape memory or flexible metal.

20. The staple assembly in accordance with claim 17 wherein said means for locking includes a backbone element, said staple having notches along a back of the staple to guide, accept, and secure said backbone to said staple.

21. The staple assembly in accordance with claim 17 wherein said means for clamping or securing includes opposing legs of a single folded over member, said legs being formed in an arc configuration, said legs having distal tips that touch when said legs are in a closed position, said distal tips of said legs being pointed.

22. A staple and stapler assembly wherein a staple is contained within stapler jaws, with means for securing said staple in a closed position once said staple is positioned and closed on desired tissue, said means for securing comprising a backbone made of rigid material, capable of

being slid over a backside of said staple and being secured firmly over the closed staple, locking into place over said closed staple.

23. The staple and stapler assembly in accordance with claim 22, further comprising
5 means for advancing the backbone over said staple, said means for advancing comprising a push bar, said push bar being connected to a handle mechanism at a proximal end of the assembly.

24. An endoscopic staple and stapler assembly for securing tissue internal to the body, comprising:

10 a staple holder component;

a staple capable of being opened and closed, said staple being releasably held by said staple holder component, said staple being biased to an open position, said staple having a biased open position angle that is greater than an open position angle of the staple holder component, said staple being insertable into organic tissue for clamping together opposing segments of said
15 tissue, said staple being made from shape memory or flexible metal, said staple having opposing legs of a single folded over member, said legs being formed in an arc configuration, said distal tips of said legs being pointed for the purpose of clamping or entering tissue for securing tissue inside of the body;

a backbone made of rigid material, slidable over a backside of said staple, said staple
20 having notches along said backside to guide, accept, and secure said backbone firmly over the staple in a closed position once said staple is positioned and closed on desired tissue; a push bar, for advancing the backbone over said staple, said push bar being temporarily coupled to said backbone;

said staple holder component including a pair of formed opposing jaws, opposing edges of said jaws being formed to securely hold said staple, said jaws being adapted to enter and grasp tissue, said jaws being attached to a drive mechanism that opens and closes said jaws, the jaws grasping targeted tissue and clamping the staple closed over the tissue while the backbone is slid
5 over said closed staple;

an elongate tube with a distal end being connected to said jaw mechanism, a proximal end connected to an actuation and handle mechanism, said elongate tube having at least one lumen and being made of a flexible material, for providing a working channel for active stapler components, securely connected to said staple holder; and

10 a handle mechanism, for actuation and manipulation of invention, securely connected to said elongate tube, and operatively connected to said push bar.

25. A tray provided with a plurality of first preformed holes adapted to securely hold staples in an open configuration, said tray also including a plurality of second preformed holes
15 aligned with respective ones of said first preformed holes for maintaining staple-locking backbones disposed in a prelocking position on proximal ends of respective ones of the staples, for facilitating loading of said staples and backbones into a staple-holding jaw mechanism of a stapling device.

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